UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 30 2015

CERTIFIED MAIL 7014 2870 0000 3318 0219
RETURN RECEIPT REQUESTED

Mr. Lester Sola
Director, Miami-Dade Water & Sewer Department
Miami-Dade County
3071 Southwest 38th Avenue
Miami, Florida 33146

Re: Compliance Evaluation Inspection of the Central District Wastewater Treatment Plant
Notice of Violation
National Pollutant Discharge Elimination System Permit No.: FL0024805

Dear Mr. Sola:

The U.S. Environmental Protection Agency Region 4 conducted a Compliance Evaluation Inspection (CEI) of Miami-Dade County's Central District Wastewater Treatment Plant on February 12, 2015. This CEI was conducted because the EPA issued the National Pollutant Discharge Elimination System (NPDES) Permit for the discharge from this facility and therefore, the EPA is required to conduct an annual inspection pursuant to 40 C.F.R. § 123.26.(e)(5). Enclosed are the CEI report and photographs taken during the CEI.

The EPA's inspection noted several NPDES Permit violations. Specifically, Miami-Dade County violated Part II, Section B.1. of the above-referenced NPDES Permit related to proper operation and maintenance as outlined in the enclosed CEI report. The EPA expects that the requirements of the new Consent Decree, once they are developed and implemented, will prevent similar foreseeable violations in the future.

If you have specific questions regarding either this Notice of Violation or the CEI, please contact Mr. Brad Ammons, of my staff, at (404) 562-9769 or via email at ammons.brad@epa.gov.

Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosures

cc: Mr. Michael Hambor
Florida Department of Environmental Protection
West Palm Beach

Mr. Francois Saint-Phard
Miami-Dade County Water and Sewer Department

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4
Water Protection Division
NPDES Permitting & Enforcement Branch

COMPLIANCE EVALUATION INSPECTION REPORT

Miami-Dade County, Florida
Water and Sewer Department
Central District (Virginia Key) Wastewater Treatment Plant
Miami, Florida
NPDES Permit No. FL0024805

Facility Address:
3989 Rickenbacker Causeway (Virginia Key)
Miami, Florida 33149

Inspection Date:
February 12, 2015

Inspectors:
Brad Ammons, Environmental Engineer, EPA Region 4
David Phillips, Environmental Engineer, EPA Region 4
Michael Bechtold, Florida DEP, West Palm Beach
Lisa Self, Florida DEP, West Palm Beach

Inspection Report Prepared by:
Brad Ammons

March 17, 2015

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ABBREVIATIONS AND ACRONYMS

$CBOD_5$	Carbonaceous Biochemical Oxygen Demand, 5-day
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	United States Environmental Protection Agency
MGD	Million Gallons per Day
MLSS	Mixed Liquor Suspended Solids
NPDES	National Pollutant Discharge Elimination System
PS	Pump Station
RAS	Return Activated Sludge
TSS	Total Suspended Solids
WASD	Miami-Dade County Water and Sewer Department
WCTS	Wastewater Collection and Transmission System
WWTP	Wastewater Treatment Plant

Miami-Dade County, FL
Central District WWTP (CDWWTP)
EPA Region 4
Compliance Evaluation Inspection
Thursday, February 12, 2015

Time of Entry: 9:15 AM.

OPENING CONFERENCE

The following people were in attendance during the opening conference before the Miami-Dade County (Miami-Dade) Central District WWTP walk-through:

EPA Region 4	Miami-Dade County WASD
Brad Ammons	Francois Saint-Phard (WWTP Supervisor)
David Phillips	

The EPA representatives and Francois Saint-Phard (WWTP Supervisor) began the opening conference by discussing what process units and equipment were out of service. Mr. Saint-Phard stated that the following units were out of service during this inspection:

Plant 1:
(1) Sludge digesters in Cluster #1.

Plant 2:
(1) North grit chamber;
(2) Oxygenation Train #2 (offline for mixer upgrades; also needs electrical upgrade);
(3) Final settling tank #10 (offline for overhaul);
(4) Sludge digesters in Cluster #1;

Mr. Saint-Phard also noted that the northern gas sphere was taken offline when they found a pinhole leak at the bottom of the sphere. In addition, he mentioned that the oxygen plant #3 is offline for repairs and that the motor for effluent pump #4 is out for maintenance. Finally, Mr. Saint-Phard noted that all of the oxygenation tanks in Plant 2 were recently cleaned.

Mr. Saint-Phard then noted that Plant 2 was hit with something that caused an upset in late December (2014) to early January (2015) from Miami Beach. Miami Beach's raw sewage is pumped through the 54" force main into Plant 2 of the CDWWTP. According to Mr. Saint-Phard, it occurred overnight and the night shift staff did not tell him until early the following morning. Night shift staff stated that they smelled a diesel-like odor in the MLSS channel of Plant 2, but when Mr. Saint-Phard toured that area the following morning, he did not smell any strange odors. Staff had to haul MLSS to re-seed Plant 2 (from Plant 1) for 3 days before the upset began to wane. When asked if it could be from the North District WWTP (NDWWTP) sludge (which is pumped to the CDWWTP for treatment), Mr. Saint-Phard stated that it was unlikely because the NDWWTP's sludge is still pumped to the 9th Street pump station, which

ultimately comes into CDWWTP Plant 1, not Plant 2. Specifically, the primary sludge from the NDWWTP is pumped directly into the sludge concentrators at the CDWWTP; the secondary sludge from NDWWTP is pumped to the 9th Street PS and thus, is discharged into the CDWWTP Plant 1 headworks.

Mr. Saint-Phard then noted that he doesn't believe that the County will meet the deadline for the CDWWTP headworks outlined in Appendix A of the new Consent Decree. County staff and consultants are considering perforated screens for the new headworks at the CDWWTP.

FDEP staff (Michael Bechtold and Lisa Self) joined the EPA and Mr. Saint-Phard for the walk-through portion of this CEI after the opening conference. FDEP staff only attended the walk-through of Plant 1.

CENTRAL DISTRICT WWTP PLANT 1 OBSERVATIONS/VIOLATIONS/DEFICIENCIES

Time of Entry: 10:00 AM

Flows enter Plant 1 of the CDWWTP from the mainland/downtown Miami via the 4th Street Pump Station and the 9th Street Pump Station through either the 72" or the 102" joint force mains. Both of Plant 1's influent aerated grit chambers were in service during the inspection. Flow at the northern grit chamber of Plant 1 was metered at 31.4 MGD (10:01 am), but Mr. Saint-Phard noted that the influent flow meters are not used for reporting purposes due to the inaccuracies when the flumes are submerged. Thus, the County adds up the flows from the incoming pump stations (i.e. 4th Street PS; 9th Street PS; Miami Beach PS; Key Biscayne PS; and a few others) to calculate the influent flows to the CDWWTP. The EPA subsequently noted that Mr. Saint-Phard told the EPA that the County had recently completed adjusting weirs that prevents submersion of the grit chamber flumes during last year's CEI. *See enclosed photo.*

While inspecting the influent automatic sampler in Plant 1's headworks, Mr. Saint-Phard told the EPA and FDEP that both influent automatic samplers (for Plant 1 and Plant 2) are time composite (i.e. the sampler pulls a 200 mL sample every hour), whereas the effluent automatic sampler is flow composite. According to County staff, parts arrived the day before this CEI to convert both of the influent automatic samplers to flow composite. *See enclosed photo.*

> **Deficiency/Recommendation:** While the EPA-issued NPDES permit only requires a 24-hour composite sample, it is a concern that Miami-Dade has time-composite samplers to monitor influent while it has flow-composite sampler for monitoring effluent. This is inconsistent compositing and could impact monitoring results (e.g. for % removal calculation). The EPA encourages Miami-Dade to install whatever equipment to make all compositing consistent and suggests that Miami-Dade conduct flow-composite samples for all influent and effluent.

Hauled waste is no longer being accepted at this WWTP. Miami-Dade has requested all waste haulers to take their loads to the County's South District WWTP.

The concrete in the influent grit chamber building was still in bad shape, as it was during the September 2011, April 2012, April 2013 and May 2014 EPA inspections.

> **Deficiency/Recommendation:** Structural/concrete issues were noted in several areas of Plant 1. Structural/concrete issues pose safety hazards for WWTP staff. Miami-Dade should address all of the structural/infrastructure issues within Plant 1 pursuant to the deadlines in the new Consent Decree.

All of the oxygenation tanks in Plant 1 were operational during this inspection. All of the final settling tanks in Plant 1 were operational during this inspection. The EPA noted that the County had installed new aluminum grates over the final settling tank troughs for safety purposes as the previous fiberglass grates were showing signs of aging.

The EPA observed less scum as well as less algae on the weirs in the Plant 1 final settling tanks than during previous inspections. While scum, algae, debris and trash appeared to be less than in previous inspections, the amount of pin floc being discharged out the ocean outfall was greater than seen in the past and is a concern. *See enclosed photo.*

> **Violation/Recommendation:** Part II, Section B.1. of the EPA-issued NPDES permit requires the permittee to "...at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." Miami-Dade violated this provision due to the large amount of pin floc being discharged to the Atlantic Ocean.
>
> Miami-Dade should explain why the final settling tanks are experiencing such large amounts of pin floc that is being discharged (e.g. sludge age and/or blanket depths; not enough sludge wasting due to out of service sludge digesters, etc.). All of the trash, floatables, algae and floc are likely to be discharged through the outfall into the Atlantic Ocean.

Mr. Saint-Phard told the EPA that all of the ultrasonic sludge blanket depth monitors in both Plants have been installed and are operational.

The EPA noted several locations in the walkways between the final settling tanks that had structural cracks in the concrete all the way through the walkway and/or support columns to the walkway in Plant 1 (e.g. walkway along final settling tank #4B). *See enclosed photo.*

> **Deficiency/Recommendation:** The structural cracks in the walkways may present a safety hazard to workers and compliance inspectors should the walkways fail while in use. Miami-Dade should thoroughly inspect and address walkways with structural risks and implement all structural repairs pursuant to the deadlines in the new Consent Decree.

Plant 1's primary anaerobic sludge digester #1 experienced a roof collapse on September 5, 2011 and was still out of service during this inspection (as was the entire sludge digester cluster #1 of

Plant 1). The EPA did not enter the sludge digester control buildings, but Mr. Saint-Phard stated that the structural building issues were the same as observed during EPA's previous inspections.

> **Violation/Recommendation:** Part II, Section B.1. of the EPA-issued NPDES permit require the permittee to "...at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." The increasing sludge digester rehabilitation needs, including but not limited to, digester covers, as well as control equipment/pumps and buildings, will likely put further stress on Plant 1 and could potentially cause solids backup into the effluent if not addressed soon. Miami-Dade should address the Plant 1 sludge digesters pursuant to the deadlines in the new Consent Decree.

SLUDGE DEWATERING BUILDING OBSERVATIONS/DEFICIENCIES

Ferric Chloride is fed into a valve box outside the Sludge Dewatering Building (prior to adding polymer) to decrease struvite creation. The two ferric chloride tankers in temporary containment that were observed outside of the sludge dewatering building during last year's CEI had been removed and a permanent ferric chloride tank (with secondary containment and controls) has been installed. *See enclosed photos.*

The EPA and FDEP did not enter the sludge dewatering building, but is assumed that the sludge truck loading ceiling structural issues were the same as noted during the EPA's April 2013 CEI.

> **Deficiency/Recommendation:** As noted for the sludge digester control buildings, the influent grit buildings and the final settling tanks for both Plants at the CDWWTP, structural and concrete issues pose safety hazards for WWTP staff and could potentially impact treatment efficiency and/or effluent quality. Miami-Dade should implement all structural rehabilitation pursuant to the deadlines outlined in the new Consent Decree.

At this point, Mr. Saint-Phard noted that he is still waiting on sludge hauling dump trucks to be delivered. Mr. Saint-Phard noted that he's been told that they've already been paid for, but the County is waiting upon delivery of the trucks. Mr. Saint-Phard also noted that all Plant 1 sludge concentrators and 2 of Plant 2's sludge concentrators have been recently overhauled.

INJECTION WELL DRILLING AREA OBSERVATIONS

Behind the sludge dewatering building, an area has been fenced off for drilling of an exploratory well that will potentially be used for injection of treated wastewater for the County to comply with the State's Ocean Outfall Legislation. At the time of this CEI, the well had been drilled to just over 1,000 feet deep. Ed Rectenwald (County drilling consultant) told the EPA that the well will eventually be over 10,000 feet deep and will have a 5,000 psi blowout preventer. Mr. Rectenwald told the EPA and FDEP that they expect that the well's injection zone will still be an estimated 2,000 feet above any oil or gas. When asked what they plan to do with the groundwater during well construction, it was noted that the ultimate plan is to hold the water, test

it for chlorides and if the chlorides are not too high, will send the water to the headworks of the CDWWTP for treatment and ultimate discharge out the ocean outfall. *See enclosed photo.*

RECORDS REVIEW OBSERVATIONS

The EPA reviewed daily sampling records (e.g. laboratory bench sheets, chain of custody forms, etc.) for the months of June 2014, December 2014 and January 2015 and the resulting Discharge Monitoring Reports (DMRs). The EPA noted the following deficiencies in the records that were reviewed:

- On June 22 and 25, 2014, the Plant 1 effluent had high values of Total Suspended Solids (TSS). On 6/22/2014, the Plant 1 effluent TSS was 54.5 mg/L (combined total effluent TSS that day was 42.5 mg/L). On 6/25/2014, the Plant 1 effluent TSS was 103 mg/L and the combined total effluent TSS was 112 mg/L.
- Looking at operational monitoring data, it appears that the upset mentioned above started on December 31, 2014. Below are the TSS % removal daily values for Plant 2 from the records reviewed:
  - December 30, 2014: 95%
  - December 31, 2014: 88%
  - January 1, 2015: 68%
  - January 2, 2015: 81%
  - January 3, 2015: 62%
  - January 4, 2015: 78%
  - January 5, 2015: 84%
  - January 6, 2015: 80%
  - January 7, 2015: 87%
  - January 8, 2015: 88%
  - January 9, 2015: 78%
  - January 10, 2015: 86%
  - January 11, 2015: 83%
  - January 12, 2015: 88%
  - January 13, 2015: 92%

Plant 2's TSS % removal returned to normal values (i.e. 90+% removal, as shown on December 30, 2014, prior to the upset) by January 13, 2015. The EPA noted that the January 27, 2015 sludge sample appeared to be normal, but is concerned about potential longer-term effects in the sludge after this upset event and its impact for approximately 2 weeks on Plant 2's TSS % removal efficiency.

CENTRAL DISTRICT WWTP PLANT 2 OBSERVATIONS/VIOLATIONS/DEFICIENCIES

Time of Entry: 4:55 pm

Flows enter Plant 2 of the CDWWTP from either Miami Beach (via 54" force main under Government Cut) or from Key Biscayne (via 24" force main). As noted in previous inspections, the influent from Miami Beach does not receive any screening.

The influent automatic sampler readout indicated the refrigerator was 3.9° Centigrade and the interior manual thermometer was 4.0° Centigrade. As noted above, both of the influent automatic samplers (Plant 1 and Plant 2) are time composite (i.e. the sampler pulls a 200 mL sample every hour), whereas the effluent automatic sampler is flow composite. According to County staff, parts arrived the day before this CEI to convert both of the influent automatic samplers to flow composite.

> **Deficiency/Recommendation:** While the EPA-issued NPDES permit only requires a 24-hour composite sample (i.e. it doesn't require flow or time based compositing), it is a concern that Miami-Dade has time-composite samplers to monitor influent while it has flow-composite sampler for monitoring effluent. This is inconsistent compositing and could impact monitoring results (e.g. for % removal calculation). The EPA encourages Miami-Dade to install whatever equipment to make all compositing consistent and suggests that Miami-Dade conduct flow-composite samples for all influent and effluent.

The EPA noted that the southern grit chamber was out of service during this CEI while Mr. Saint-Phard had told the EPA that the northern grit chamber of Plant 2 was out of service at the opening conference. At the headworks, Mr. Saint-Phard told the EPA that the northern grit chamber had just been placed back into service the week prior to this CEI and that may explain the discrepancy. The influent flowrate for Plant 2 was observed to be 71.29 MGD (north grit flume). As noted during last year's CEI, the Miami Beach flow meter is locked and is under the control of the City of Miami Beach. The City has placed a sticker on the meter stating that the paper recorder is a percentage of flow, not the actual flow (similar to the effluent flow meter of this WWTP).

While at the grit chambers for Plant 2, the EPA inquired about the rehabilitation of the generators for the WWTP that are south of the grit chambers. Mr. Saint-Phard stated that the generators were upgraded to external radiators about 9 years ago, but that the radiators were never connected to the engines. Miami-Dade has completed the rehabilitation of the generators.

Three of the four oxygenation tanks were in service during this inspection. Oxygenation tank #2 was out of service for upgrades of the mixers and Mr. Saint-Phard noted that it needs an electrical upgrade as well.

While the EPA did not observe any items that would be screened out of the wastewater by bar screens (e.g. cloths, rags, etc.) that had been noted in previous inspections in the influent trough to the Plant 2 final settling tanks, the EPA still recommends that Miami-Dade consider requiring the City of Miami Beach to install bar screens at its pump station similar to the bar screens on Miami-Dade's 4th Street pump station and/or installing bar screens at the headworks of Plant 2.

Final settling tank #10 was out of service for an overhaul (cleaning, fixing skimmer chains, coating concrete and/or weirs with paint or epoxy, etc.).

In the final settling tanks/secondary clarifiers of Plant 2, the EPA observed some algae and large floatables, trash/debris (e.g., plastic trash), unsettled floc and large amounts of pin floc. *See the enclosed photos.*

Violation/Recommendation: Part II, Section B.1. of the EPA-issued NPDES permit requires the permittee to "…at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." Previous EPA inspections have noted similar trash, floatables, algae and pin floc in the final settling tanks/secondary clarifiers.

Miami-Dade should explain why the final settling tanks are experiencing such large amounts of pin floc that is being discharged (e.g. sludge age and/or blanket depths; not enough sludge wasting due to out of service sludge digesters, etc.) through the outfall into the Atlantic Ocean.

The EPA did observe that new sludge blanket meters have been installed for all 10 of the Plant 2 final settling tanks. Mr. Saint-Phard told the EPA that all of the sludge blanket meters had been installed in both Plants. *See enclosed photo.*

The EPA noted several locations in the walkways between the final settling tanks that had structural cracks in the concrete all the way through the walkway and/or support columns to the walkway.

Deficiency/Recommendation: The structural cracks in the walkways may present a safety hazard to workers and compliance inspectors should the walkways fail while in use. Miami-Dade should thoroughly inspect and address walkways with structural risks and implement all structural repairs pursuant to the deadlines in the new Consent Decree.

The EPA did not inspect the sludge digester control buildings, but Mr. Saint-Phard stated that they were in the same condition as they were during the EPA's April 2013 inspection.

Violation/Recommendation: Part II, Section B.1. of the EPA-issued NPDES permit requires the permittee to "…at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." The increasing sludge digester rehabilitation needs, including but not limited to, digester covers, as well as control equipment/pumps and buildings, will likely put further stress on Plant 2 and could potentially cause solids backup into the effluent if not addressed soon. Miami-Dade should address the Plant 2 sludge digesters pursuant to the deadline in the new Consent Decree.

EFFLUENT PUMP STATION

Time of Entry: 5:53 PM

The EPA observed that the effluent automatic sampler was in the same new location as noted during the 2014 CEI. In addition, Miami-Dade has installed effluent pH, Turbidity, Dissolved Oxygen and Residual Chlorine meters, which were all in service at the time of this inspection.

The EPA noted that it appears that the Residual Chlorine dipped below 0.5 mg/L the day before this CEI according to the recording paper.

Effluent pump #2 had been overhauled and placed back into service on 12/9/2014 according to Mr. Saint-Phard. The EPA observed a seal leak at this pump during this CEI. *See enclosed photo.*

EXIT CONFERENCE

The EPA opened the exit conference with Mr. Saint-Phard by stating that improvements in equipment service had been noticed since the 2014 CEI. The EPA then outlined the following deficiencies and/or violations to Mr. Saint-Phard:

- Miami-Dade should have notified the EPA and FDEP within 24 hours of noticing the upset that started in late December 2014 according to Part II, Section D.8. of the EPA-issued NPDES permit;
- Staffing issues at the CDWWTP still appears to be a deficiency;
- Light floc, uneven flow and debris at weirs was noticed in the Plant 1 final settling tanks;
- According to records, it appears that it took approximately 13 days to recover from the December 2014 upset from Miami-Beach;
- On the June 2014 DMR cover letter, it was stated that Plant 2 was the problem, but according to records reviewed, it appears that Plant 1 was the culprit;
- Concern about the oxygen production plant #3 being out of service for 2 months even though it is a "backup" O_2 plant;
- CDWWTP still waiting on sludge hauling trucks to be delivered even though they've been paid for;
- EPA suggested that Miami-Dade should check their February and March sludge samples for metals to see if the metals were higher than normal after the December 2014-January 2015 upset;
- Plant 2's influent automatic sampler displayed a pump hose warning;
- The influent automatic samplers (Plant 1 and Plant 2) are pulling time composite aliquots when the effluent automatic sampler is pulling flow composite aliquots (NOTE: staff did tell the EPA that parts were in and to be installed soon to make the influent automatic samplers pull flow composite aliquots like the effluent sampler);
- Missing or broken label signs in the final settling tanks of both Plants;
- MLSS foam at the influent of the final settling tanks (Plant 2);
- Longitudinal structural cracks in both walkways and walkway support columns in the final settling tanks (both Plants);
- Water was somehow moving in final settling tank #10 of Plant 2 even though it was out of service;
- Miami-Dade needs to make a decision soon about what to do at the headworks of the CDWWTP (build new headworks vs. installing perforated screen in existing structures), especially if there are concerns of missing the final compliance date of this project under the Consent Decree.

Time of Exit: 7:15 PM.

Miami-Dade Central District WWTP (EPA; 2/12/2015)

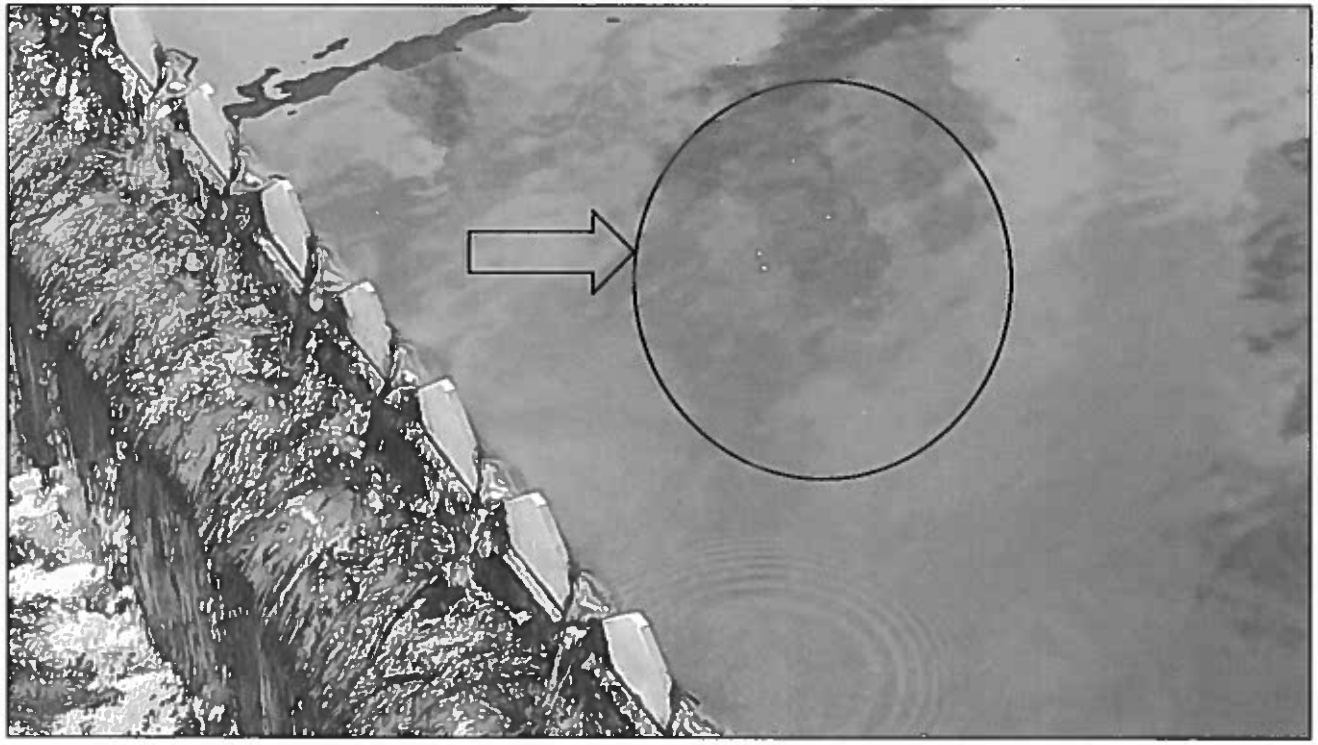
Plant 1 influent flow meter display (northern grit flume)

Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 1 influent automatic sampler display

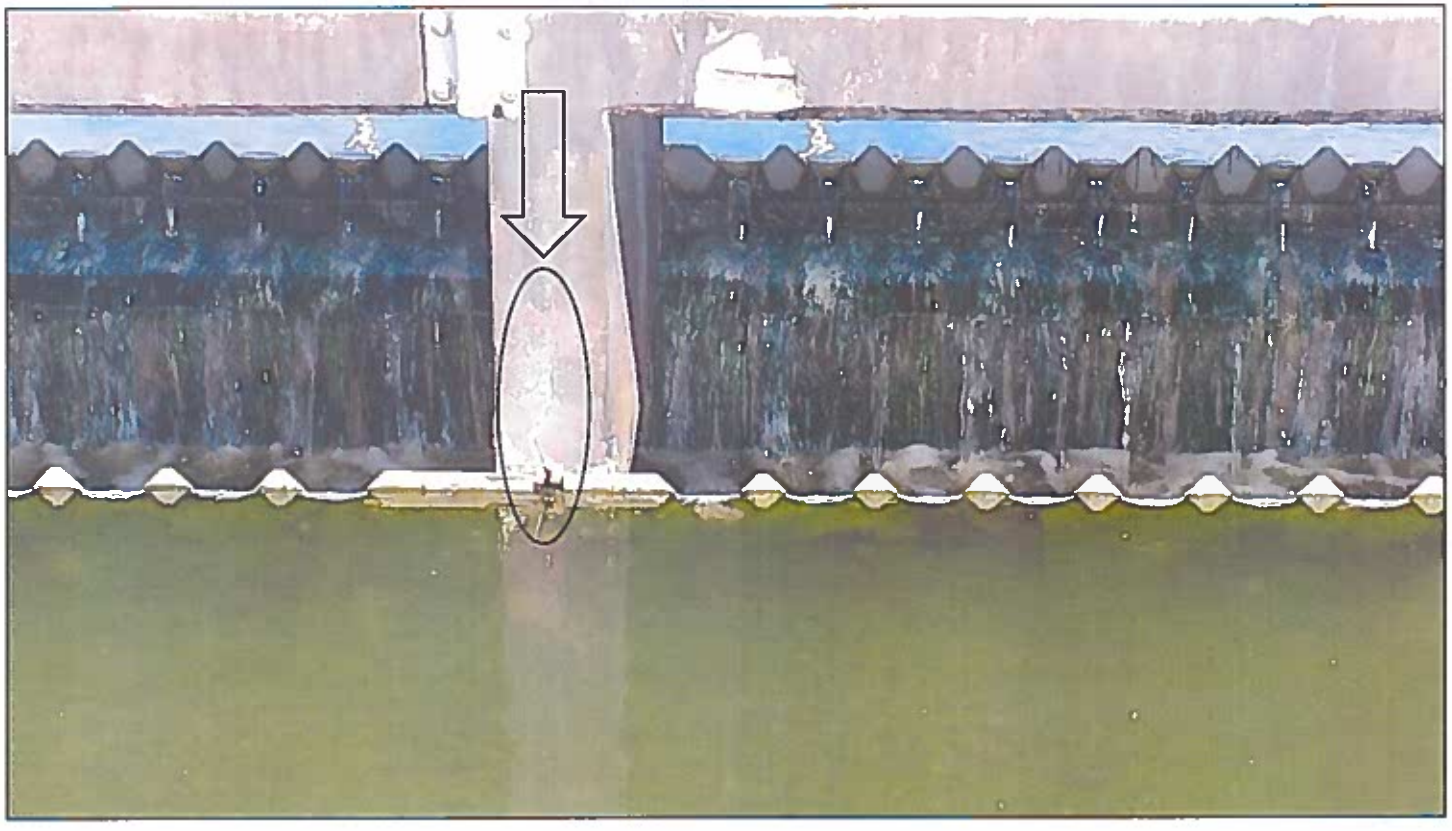
Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 1, final settling tank #4C (note heavy flocculation)



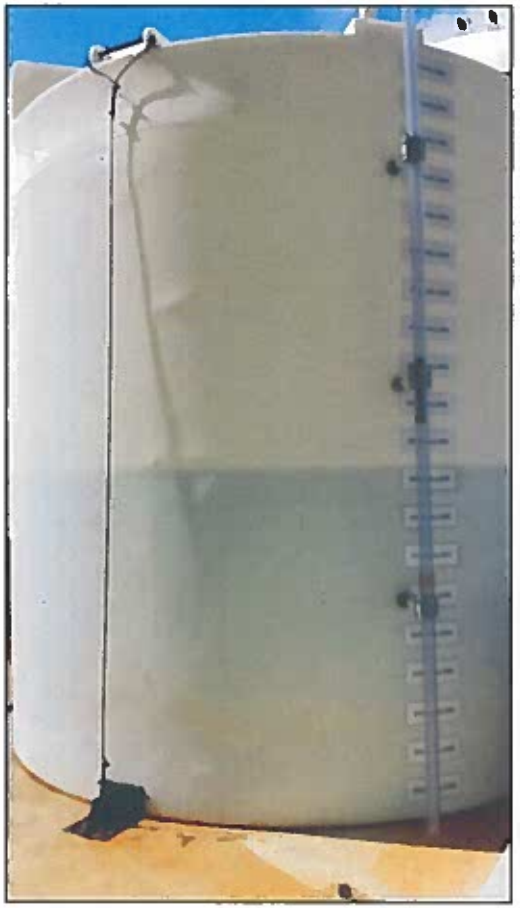
Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 1, Final settling tank #4B (note structural crack in walkway support)



Miami-Dade Central District WWTP (EPA; 2/12/2015)

Ferric Chloride permanent tank with containment and controls outside sludge dewatering building

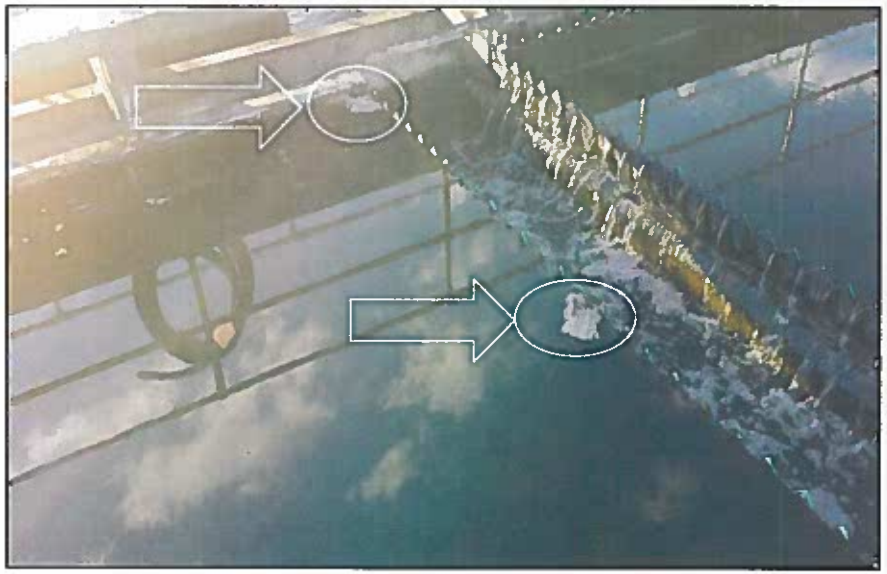


Miami-Dade Central District WWTP (EPA; 2/12/2015)

UIC exploratory well drilling (east of sludge dewatering building)

Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 2, Final settling tanks #7A (Left) and 7B (Right) (note floatables)



Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 2, Final settling tank #7B (note heavy flocculation)

Miami-Dade Central District WWTP (EPA; 2/12/2015)

Plant 2, Sludge blanket meter at Final settling tank #9B for tanks #9 and 10

Miami-Dade Central District WWTP (EPA; 2/12/2015)

Effluent Pump Station, Pump #2 (note seal water leak on floor)